28. What is $\lim_{x\to 0}\dfrac{e^{2x}-1}{\tan x}$?

(A) -1 (B) 0 (C) 1 (D) 2 (E) The limit does not exist.

23. $\lim_{h\to 0}\dfrac{1}{h}\ln\left(\dfrac{2+h}{2}\right)$ is

(A) e^2 (B) 1 (C) $\dfrac{1}{2}$ (D) 0 (E) nonexistent

37. $\lim_{x\to 0}\frac{1-\cos^2(2x)}{x^2}=$

(A) -2 (B) 0 (C) 1 (D) 2 (E) 4

38. $\lim_{x\to\infty}\left(1+5e^x\right)^{\frac{1}{x}}$ is

(A) 0 (B) 1 (C) e (D) e^5 (E) nonexistent

35. If k is a positive integer, then $\lim_{x\to+\infty} \frac{x^k}{e^x}$ is

(A) 0 (B) 1 (C) e (D) $k!$ (E) nonexistent

2. If $f(x)=2x^2+1$, then $\lim_{x\to0} \frac{f(x)-f(0)}{x^2}$ is

(A) 0 (B) 1 (C) 2 (D) 4 (E) nonexistent

24. Let f and g be functions that are differentiable for all real numbers, with $g(x) \neq 0$ for $x \neq 0$.

If $\lim_{x\to 0} f(x) = \lim_{x\to 0} g(x) = 0$ and $\lim_{x\to 0} \frac{f'(x)}{g'(x)}$ exists, then $\lim_{x\to 0} \frac{f(x)}{g(x)}$ is

(A) 0

(B) $\frac{f'(x)}{g'(x)}$

(C) $\lim_{x\to 0} \frac{f'(x)}{g'(x)}$

(D) $\frac{f'(x)g(x) - f(x)g'(x)}{(f(x))^2}$

(E) nonexistent

42. $\lim_{x\to 0} (1+2x)^{\csc x} =$

(A) 0 (B) 1 (C) 2 (D) e (E) e^2